(d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and

(e) a fragment, derivative or allelic variant of a nucleic acid molecule mentioned under (a), (b), (c), or (d).

42. The starch of claim 41 wherein the phosphate content is increased when compared to starch from wild-type plants.

43. A protein encoded by a nucleic acid molecule encoding a protein which is present in plant cells in starch granule-bound form as well as in soluble form, said nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;

(b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;

(c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b);

(d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and

(e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d).

44. A method for the production of a protein, which is present in plant cells in granule-bound as well as in soluble form, in which a host cell which is genetically modified with a nucleic acid molecule encoding a protein of claim 43 wherein said host cell is cultivated under conditions allowing for the expression of the protein and in which the protein is isolated from the cells and/or the culture medium.

45. A protein obtainable by the method of claim 44.

46. An antibody specifically recognizing the protein of claim 43 or claim 45.

47. A nucleic acid molecule with a length of at least 15 nucleotides which specifically hybridizes to a nucleic acid molecule encoding a protein of claim 43.

48. A DNA molecule encoding an antisense-RNA complementary to the transcripts of a DNA molecule encoding a protein of claim 43.

49. A DNA molecule encoding an RNA with ribozyme activity which specifically cleaves transcripts of a DNA molecule encoding a protein of claim 43.

50. A DNA molecule encoding an RNA which upon expression in a plant cell leads to a reduction of the expression of a nucleic acid molecule encoding a protein of claim 43 due to a cosuppression effect.

51. A vector containing a DNA molecule of any one of claims 48 to 50.

52. The vector of claim 51, wherein the DNA molecule is combined with regulatory DNA elements ensuring transcription in plant cells.

53. A host cell containing a DNA molecule of any one of claims 48 to 50 or a vector of claim 51 or 52.

54. A transgenic plant cell containing a DNA molecule of any one of claims 48 to 50 in combination with regulatory DNA elements ensuring transcription in plant cells.

55. The transgenic plant cell of claim 54, in which the activity of at least one further enzyme involved in starch biosynthesis or modification is reduced when compared to non-transformed plants.

56. The transgenic plant cell of claim 55 in which the activity of a branching enzyme is reduced.

57. The transgenic plant cell of claim 55 in which the activity of a starch granule-bound starch synthase of the isotype I (GBSS I) is reduced.

58. A transgenic plant obtainable by regenerating a plant cell of any one of claims 54 to 57.

59. Starch obtainable from plant cells of any one of claims 54 to 57 or from plants of claim 58.

60. An RNA molecule obtainable by transcription of a DNA molecule of any one of claims 48 to 50.

61. A method for the production of transgenic plant cells synthesizing a modified starch wherein the amount of proteins of claim 43, which are synthesized in the cells in endogenous form, is reduced in the cells.

62. The method of claim 61 wherein the reduction of the amount of proteins of claim 43 in the cells is caused by an antisense effect.

63. The method of claim 61 wherein the reduction of the amount of proteins of claim 43 in the cells is caused by a ribozyme effect.

64. The method of claim 61 wherein the reduction of the amount of proteins of claim 43 in the cells is caused by a cosuppression effect.

65. The method of any one of claims 61 to 64, wherein the enzyme activity of at least one further enzyme involved in the starch biosynthesis and/or modification is reduced.

66. The method of claim 65 wherein the enzyme is a branching enzyme.

67. The method of claim 65 wherein the enzyme is a starch granule-bound starch synthase of the isotype I (GBSSI).

68. A plant cell obtainable by a method of any one of claims 61 to 67.

69. A transgenic plant obtainable by regenerating the plant cell of claim 68.

70. Starch obtainable from plant cells of claim 68 or a plant of claim 69.

71. The starch of claim 70 wherein it is derived from potato.

72. The starch of claim 70 or 71 exhibiting a reduced phosphate content when compared to starch from wild-type plants.

73. The propagation material of plants of claim 58 or 69, containing plant cells of any one of claims 54 to 57 or of claim 68.

74. The transgenic plant of claim 58 or 69 which is a potato plant.

75. Tuber of a potato plant of claim 74.

76. The tuber of claim 75 which in comparison to tubers of wild-type plants exhibits a reduced cold sweetening.

77. The use of the tuber according to claim 75 for the production of fried foodstuff.

78. A transgenic plant cell that synthesizes a modified starch compared to starch from wild-type cells, wherein the amount of a protein of claim 43 is increased in the transgenic plant cell when compared to a wild-type plant cell.

79. A transgenic plant cell that synthesizes a starch with an increased phosphate content compared to starch from wild-type cells, wherein the amount of a protein of claim 43 is increased in the transgenic plant cell when compared to the wild-type plant cell.

80. The DNA molecule of claim 48 which has a length of at least 15 nucleotides.

81. The transgenic plant cell of claim 54 wherein the amount of a protein of claim 43 is reduced in the transgenic plant cell when compared to the wild-type plant cell.

82. Starch obtainable from plant cells which are obtainable by the method of claim 66 exhibiting an increased amylose content when compared to starch from wild-type plants.

83. The starch of claim 82 which exhibits a reduced phosphate content.

84. The starch of claim 82 or 83 which is derived from potato.

85. Starch obtainable from plant cells which are obtainable by the method of claim 67 exhibiting an increased amylopectin content when compared to starch from wild-type plants.

86. The starch of claim 85 which exhibits a reduced phosphate content.

87. The starch of claim 85 or 86 which is derived from potato.